

REMARKS

Claim Rejections - 35 U.S.C. § 102 and § 103

The Examiner has rejected claims 1-7 and 10-13 under 35 USC §102 as unpatentable over Kub et al. (U.S. Patent No. 6,323,108). The Examiner has rejected claims 8 and 9 under 35 USC §103(a) as unpatentable over Kub et al. (U.S. Patent No. 6,323,108) in combination with Ghyselen et al. (U.S. Patent No. 6,867,067). The Examiner has rejected claim 14 under 35 USC §103(a) as unpatentable over Kub et al. (U.S. Patent No. 6,323,108). The Examiner has rejected claims 15 and 16 under 35 USC §103(a) as unpatentable over Kub et al. (U.S. Patent No. 6,323,108) in combination with Letertre et al. (U.S. Patent No. 6,815,309). The Examiner has rejected claim 17 under 35 USC §103(a) as unpatentable over Kub et al. (U.S. Patent No. 6,323,108) in combination with Letertre et al. (U.S. Patent No. 6,815,309) and further in combination with Lam et al. (U.S. Patent No. 2005/0060115).

The Applicant respectfully traverses. The cited references, either individually or in combination, fail to teach or render obvious all of the elements of the Applicant's claimed invention. In particular, the cited references fail to teach the elements of independent claim 1 of "forming a splitting layer in a semiconductor substrate; and depositing a bulk heat dissipation substrate onto the semiconductor substrate, the bulk heat dissipation substrate having a thermal conductivity greater than that of said semiconductor substrate; and splitting said semiconductor substrate along said splitting layer after depositing said semiconductor substrate onto said bulk heat dissipation substrate." This particular order of first forming a splitting layer in a semiconductor substrate, then depositing the bulk heat dissipation substrate on the semiconductor substrate, and finally splitting the semiconductor substrate along the splitting layer is not taught by any of the cited references. Kub teaches the "bond

and split” method of forming a substrate. The order of the steps of this method, as described in Column 3 lines 43 – 53 of Kub, are (a) growing an etch stop layer on a first substrate; (b) growing an ultra-thin material layer on the etch stop layer (c) implanting an implant ion to a selected depth into the first substrate; (d) bonding the ultra-thin material layer to a second substrate; and (e) treating the first substrate to cause the first substrate to split at the selected depth. Letertre teaches a method of first bonding a donor layer to a support layer and secondly implanting a gaseous species into the donor wafer and splitting the donor wafer. Ghyselen teaches forming a final substrate 14 of a thin transfer layer 2 and a thick support material layer 4 by the steps of: forming a bonding layer 10 on a surface of a source substrate 6 that is preferably subjected to the implantation of atomic species (implant). Another bonding layer 11 is formed on a surface of an intermediate support 12 of amorphous material. In step 100, the bonding layers 10 and 11 are joined. In step 200, the transfer layer 2 is detached from the source substrate 6 via the zone of weakness 8. In step 300, a thick support material layer 4 is deposited on the surface of the transfer layer 2 (Col. 5 lines 9 – 27.) In sum, Ghyselen teaches (1) implanting, (2) splitting, and then (3) depositing a support layer onto the transfer layer. Lam also fails to teach the elements of claim 1. Therefore, the cited references fail to teach the specific order of first forming a splitting layer in a semiconductor substrate, then depositing the bulk heat dissipation substrate on the semiconductor substrate, and finally splitting the semiconductor substrate along the splitting layer as claimed by the Applicant in Claim 1.

As such, the Applicant respectfully submits that the cited references fail to teach or render obvious each of the elements of independent claim 1 for at least the reasons advanced above. The Applicant requests that the Examiner withdraw the rejection.

Claims 2, 3, 5, 6, 9 – 12 depend, directly or indirectly, on claim 1. Because the cited references do not anticipate claim 1, as discussed above, the cited references do not anticipate claims 2, 3, 5, 6, 9 – 12 for at least the same reasons. Applicant respectfully requests that the Examiner withdraw the rejection.

Regarding independent claim 15, the Applicant respectfully submits that the cited references, either individually or in combination, do not teach or render obvious claim 15 for at least the reasons discussed above with respect to claim 1. Claims 16 and 17 depend upon


independent claim 15 and thus are also not taught or rendered obvious by the cited references. Claims 2, 3, 5, 6, 9 – 12, and 15 – 17 are currently pending. In view of the foregoing amendments and remarks, Applicant respectfully submits that the pending claims have overcome the Examiner's objections and rejections. Applicant respectfully requests reconsideration for the application and allowance of the pending claims.

If there are any additional charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

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